Key to the Major Landscape Types

1. Subterranean features; openings into the earth's surface; biota adapted to life in darkness; too dark to support growth of vascular plants .......................................................... IX. CAVE

2. Terrestrial features; biota adapted to life in sunlight .......................................................................................................................... 2

2. Areas of land surface with soil saturated or covered by water most of the growing season (size ranges from 1/10 acre for seepage communities to more than 500 acres for swamp or marsh); obligate wetland vegetation predominant (including submerged aquatic plants); plants and animals adapted for life in water; fen, marsh, acid seep, pond marsh, swamp, shrub swamp ........................................... VIII. WETLAND

3. Areas of land surface with soil (if present) dry to moist (if wet, not for significant periods of the growing season); plants and animals adapted to drier situations ........................................................................... 3

3. Land surface barren or sparsely vegetated, rocky or gravelly; soil thin or absent, poorly developed or exposed along drainages, streams and rivers ........................................................................ 4

4. Soil shallow or absent over bedrock exposed on uplands, sideslopes or nearly vertical to vertical cliffs .................................................................................................................. 5

5. Barren or sparsely vegetated, vertical exposures of bedrock and associated accumulated rock fragments; broken bedrock of any type greater than 10 feet in height with a linear width greater than 30 feet and/or exposed areas of loose, unstable rock or boulders on steep slopes and base of bluffs .................................................. VI. CLIFF/TALUS

5. Barren to moss, lichen, grass or herb-covered openings of gentle to steep upland slopes; size of area 1/2 to more than 500 acres ................................................................. V. GLADE

4.Accreted boulders, cobbles, gravel, sand, silt and organic debris constantly mowed by frequent flooding, or exposed by active erosion including headwater washes and stream/river edges/embankments .................................................................... VII. STREAM EDGE

6. Land surface with uniform, widespread, well-developed vegetation; soil moderately deep to very deep and generally well developed (shallow soil areas of forest, woodland, savanna or prairie included here) .............................................................................. 6

6. Grasslands and/or shrubs combined prevalent over landscape; tree canopy cover less than 10 percent .................................................................................. IV. PRAIRIE

6. Tree canopy cover 10 percent or greater .............................................................................................................................. 7

7. Tree canopy 70 to 100 percent cover; narrow crowns and clean trunks; understory multilayered and dense consisting of shade-adapted herbs, ferns, spring ephemerals; plant community structure not greatly influenced by fire or native herbivores; on landscape positions protected from fire ........................................... I. FOREST

7. Tree canopy less than 90 percent cover; somewhat spreading to widespread crowns; vegetation layers generally two or three with a patchy to dense ground layer during most of the season; plant community and species composition often influenced by low to moderate intensity fires .............................................................................. 8

8. Canopy 30 to 90 percent cover; somewhat spreading crowns; understory patchy to scattered depending on fire intensity and frequency (fires every three to 15 years) consisting of open-grown, scattered gnarly shrubs and small trees; grasses, sedges and summer/fall forbs form patchy to dense cover; natural communities strongly associated with landscapes dominated by trees ............................................ II. WOODLAND
8. Canopy 10 to 30 percent cover; wide-spreading crowns; sparse understory due to frequent, moderately intense fires every one to three years; warm-season grasses, shrubs, forbs dominant; natural communities strongly associated with gently rolling to level topography and areas or borders of prairie ........................................... III. SAVANNA

Key to the Terrestrial Natural Communities

I. FOREST

1. Land periodically flooded by stream or river overflow, bottomland forest natural communities .................. 2

2. Forested portions in active channel zone characterized by frequent flooding, scouring and active deposition; soils poorly developed or absent with substrate consisting of actively deposited sand, gravel, boulders, silt and organic debris; ground cover vegetation often sparse and adapted to scouring disturbance ........................................................................................................... 3

3. Active flooding zone located in narrow, steep-walled, high gradient stream valleys; channels sometimes absent in losing streams, primarily Ozarkian high-gradient headwater valleys; soils well drained following flash floods, consisting of coarse sand, gravel or boulders; white oak and sycamore dominant trees .......................................................... Dry-mesic bottomland forest

3. Active flooding zone located along larger, lower gradient stream or river valleys or bottomlands; soils moderately well drained to poorly drained following floods consisting of finer gravel, sand, silt, clay and organic debris ................................................................. Riverfront forest

2. Forested areas of more level floodplains of larger, lower gradient stream or river valleys, or bottomlands; soils moderately well drained to poorly drained following floods; soils better developed consisting of finer sand, silt, clay and organic debris; vegetation and canopy structure more permanently established ............................................................................................................. 4

4. Land and soil moderately well to poorly drained, soil profile seasonally moist, ponding generally not present; forest structure well developed, ground cover consists of mixed spring-flowering herbs along with summer and fall herbs; cover dense (80 to 100 percent) .................. Mesic bottomland forest

4. Land and soil somewhat poorly to poorly drained; soil profile wet seasonally or throughout the year with ponding prevalent part or most of the year; forest structure generally irregularly to poorly developed; ground cover uniform or absent, when uniform consisting of only a few spring-flowering plants because of repeated flooding; most herbs flowering in summer and fall; cover sparse to abundant (20 to 80 percent) ........................................................................................................................................ 5

5. Soil seasonally wet, water table to within 18 inches from the surface; ponding in low areas in winter and early spring, or during flood; forest canopy a mixture of species; understory present; ground cover a mixture of late-flowering perennial herbs, sedges and grasses .................................................................................................................. Wet-mesic bottomland forest

5. Soil wet for significant periods of the year, water table near or at the surface, ponding evident throughout the year over large areas; forest canopy consisting of a few water-tolerant species or stands of dead trees where flooding is prolonged; understory generally absent; ground cover sparse or absent with extensive surface areas of exposed silt, mud or organic debris; ground cover restricted to a few late-flowering herbs ........................................ Wet bottomland forest

1. Land not normally flooded, upland forest natural communities ................................................................................................................................. 6
6. Rock parent material detectable (may have to refer to local soil descriptions) on surrounding local landscape with bedrock or bedrock residuum contained in upper soil layers

7. Tree canopy averaging 70 to 90 feet; ground cover patchy to abundant (20 to 60 percent cover), consisting of a scattering of spring-flowering herbs with summer and fall-flowering herbs and vines dominant, forests of upland slopes and ridges

   a. Parent material substrate derived from various limestone/dolomite rock formations ......................... Dry-mesic limestone/dolomite forest

   b. Parent material substrate with a high concentration of chert rock ....................................................................................... Dry-mesic chert forest

   c. Parent material substrate derived from various sandstone rock formations ............................................. Dry-mesic sandstone forest

   d. Parent material substrate derived from various igneous rock formations ....................................................... Dry-mesic igneous forest

7. Tree canopy averaging 90 to 140 feet; ground cover often dense (more than 60 percent cover), generally rich with an abundance of spring-flowering herbs, forests of protected valleys, ravines and bases of bluffs

   a. Parent material substrate derived from various limestone/dolomite formations (best developed at base of north-facing bluffs) ................................................................. a, b Mesic limestone/dolomite forest

   b. Parent material substrate derived from various sandstone rock formations ............................................... Mesic sandstone forest

6. Little or no rock parent material detectable on land surface, little or no bedrock residuum contained in upper soil layers; parent material primarily sand, sandy loam, loess and glacial till

8. Soil parent material derived from wind-deposited sand or ancient sand alluvium of elevated ridges and terraces not subject to flooding

9. Tree canopy height 60 to 90 feet; ground cover patchy to abundant consisting of a few spring-flowering herbs; summer and fall-flowering herbs dominant .............................................................. Dry-mesic sand forest

9. Tree canopy height 90 to 140 feet; ground cover often dense, consisting of carpets of many spring-flowering herbs and ferns ........................................... Mesic sand forest

8. Soil parent material wind-blown loess or glacial till, sometimes over deeply weathered rock

10. Tree canopy height 60 to 90 feet; ground cover patchy to abundant, consisting of a few spring-flowering herbs, summer and fall-flowering herbs prevalent ................................................. Dry-mesic loess/glacial till forest

10. Tree canopy height 90 to 140 feet; ground cover often dense, consisting of many spring-flowering herbs and ferns ................ Mesic loess/glacial till forest
II. Woodland

1. Soil profile characterized by a nearly impervious subsoil layer, which allows the land surface to be wet in spring (with ponding in depressions), becoming dry and parched in summer ........................................... Flatwoods 2

2. Confined to sinkhole basins only ........................................................................... Sinkhole flatwoods

2. Occurring on upland flat ridges and plains, or broad level bottomlands ........................................... 3

3. Found on level to nearly level ground on floodplains and terraces often subject to stream or river flooding, especially in the Mississippi River Alluvial Basin Section ................................................................. Bottomland flatwoods

3. Found on upland flat ridges and plains, especially the Springfield Plateau and Central Plateau subsections ........................................................................................... Upland flatwoods

1. Soil profile characterized by a somewhat pervious to pervious subsoil layer, if impervious then slope will not allow water to pond on the surface ......................................................................... 4

4. Land periodically flooded by stream or river overflow, bottomland woodland natural communities ................................................................................................................................. 5

5. Natural community restricted to narrow valleys of high gradient streams and small rivers in the Ozark Highlands Section; occurs in fire-prone landscapes .............................................................. Dry-mesic bottomland woodland

5. Natural community more widespread on terraces of larger stream and river floodplains; fire less frequent ...................................................................................................................... 6

6. Soils moderately well to well drained; rarely flooded ........................ Mesic bottomland woodland

6. Soils somewhat poorly drained; flooded or saturated in fall and winter .................. Wet-mesic bottomland woodland

4. Land not subject to stream or river overflow; upland topography: toeslopes, sideslopes, ridge tops, mountain domes, rolling plains; subject to moderate fire intensity and frequency; upland woodland natural communities ......................................................................................................................... 7

7. Rock parent material detectable (may have to refer to local soil descriptions) on surrounding local landscape with bedrock or bedrock residuum contained in upper soil layers ......................................................................................................................... 8

8. Tree canopy averaging 60 to 90 feet; canopy closure 80 percent or greater; aspect generally north, east, west; moderate to high site indices; ground layer plants primarily mix of woodland grasses, sedges and summer/fall forbs ........................................... a, b, c, d

a. Parent material substrate derived from various limestone/dolomite rock formations ........ Dry-mesic limestone/dolomite woodland

b. Parent material substrate derived from various chert rock formations ........................................... Dry-mesic chert woodland

c. Parent material substrate derived from various sandstone rock formations ........................................... Dry-mesic sandstone woodland

d. Parent material substrate derived from various igneous rock formations ........................................... Dry-mesic igneous woodland

8. Tree canopy averaging 20 to 60 feet; canopy closure 30 to 90 percent; aspect generally south- or west-facing; low site indices; ground layer plants primarily warm-season grasses, sedges and diversity of forbs entire growing season ........................................... a, b, c, d
a. Parent material substrate derived from various limestone/dolomite formations ................................................................. **Dry limestone/dolomite woodland**

b. Parent material substrate derived from various sandstone rock formations ......................................................................................... **Dry sandstone woodland**

c. Parent material substrate derived from various chert rock formations or chert residuum ........................................................................... **Dry chert woodland**

d. Parent material substrate derived from various igneous rock formations .......................................................................................... **Dry igneous woodland**

7. Little or no rock parent material detectable; soils primarily derived from sand, sandy loam, loess, or glacial till (may have to refer to local soil descriptions) parent material ................................................................. 9

9. Soil parent material derived from wind-deposited sand or ancient sand alluvium of elevated ridges and terraces not subject to flooding; primarily in southeastern Missouri in the Mississippi River Alluvial Basin Section .................................................................................................................. 10

9. Tree canopy averaging 60 to 90 feet; canopy closure 80 percent or greater; aspect generally north, east, west; moderate to high site indices; ground layer plants primarily mix of woodland grasses, sedges and summer/fall forbs ................................................................. **Dry-mesic sand woodland**

9. Tree canopy averaging 20 to 60 feet; canopy closure 30 to 90 percent; aspect generally south- or west-facing; low site indices; ground layer plants primarily warm-season grasses, sedges and diversity of forbs entire growing season ........................................................................................................................................... **Dry sand woodland**

9. Soil parent material wind-blown loess or glacial till, sometimes deeply weathered rock; primarily in the Outer Ozark Border Subsection and Central Dissected Till Plains Section ........................................................................................................................................................................................................................................ 11

9. Tree canopy averaging 60 to 90 feet; canopy closure 80 percent or greater; aspect generally north, east, west; ground layer plants primarily mix of woodland grasses, sedges and summer/fall forbs ................................................................. **Dry-mesic loess/glacial till woodland**

9. Tree canopy averaging 20 to 60 feet; canopy closure 30 to 90 percent; aspect generally south- or west-facing; low site indices; ground layer plants primarily warm-season grasses, sedges and diversity of forbs entire growing season .................................................................................................................................................................................................................. **Dry loess/glacial till woodland**

III. Savanna

1. Rock parent material detectable (may have to refer to local soil descriptions) on surrounding local landscape with bedrock or rock residuum contained in upper soil layers ...........................................................................................................................................................................................................................................  a, b, c

a. Parent material substrate derived from various limestone/dolomite rock formations ................................................................. **Limestone/dolomite savanna**

b. Parent material substrate derived from various formations with a high concentration of chert ......................................................................................... **Chert savanna**

c. Parent material substrate derived from various sandstone rock formations .......................................................................................... **Sandstone/shale savanna**
IV. Prairie

1. Soil profile characterized by a nearly impervious subsoil layer, which allows the land surface to be wet in spring (with ponding in depressions), becoming dry and parched in summer; generally level upland land surface ................................................................. Hardpan prairie

2. Land periodically flooded by stream or river overflow, or poorly drained and moist to wet due to poor drainage or seepage in upland prairie draws; soil somewhat poorly to poorly drained, seasonally wet for significant periods of the year with ponding prevalent during winter into early spring; generally low areas of larger floodplains and upland depressions; bottomland prairie natural communities ........ 3

3. Broad depressions along the upper reaches of upland prairie headwater drainages, draws and at the base of slopes; soils generally formed from chert, limestone/dolomite, loess/glacial till, or sandstone/shale residuum ....................................................... Prairie swale

4. Soil seasonally wet, water table to within 18 inches from the surface, ponding in low areas during winter and early spring, or during flood; dominant grasses are big bluestem and cord grass ....................................................... Wet-mesic bottomland prairie

5. Soil wet for significant periods of the year, water table near or at the surface, ponding evident throughout the year; dominant plants are cord grass and sedges ....................................................... Wet bottomland prairie

2. Land not normally flooded; soils well drained; topography generally sloping to steep .............................................. 5

3. Rock parent material detectable on local surrounding landscape with bedrock or rock residuum contained in upper soil layers (may have to refer to local soil descriptions) ....................................................... 6

4. Soils somewhat rapidly drained, slopes generally steep to very steep; grass height short, 1 to 3 feet; little bluestem, prairie dropseed, side oats grama dominant; parent material substrate derived from various limestone/dolomite rock formations; rare natural community type ................................................................. Dry limestone/dolomite prairie

5. Soils well drained, slopes gentle to moderately steep; grasses mid-height, 3 to 6 feet; little bluestem, Indian grass, big bluestem dominant .............................................. a, b, c

a. Parent material substrate derived from various formations with high concentrations of chert ................................................................. Dry-mesic chert prairie

b. Parent material substrate derived from various formations with high concentrations of loess ................................................................. Dry-mesic loess prairie

c. Parent material substrate derived from various formations with high concentrations of sand ................................................................. Dry-mesic sand prairie

6. Soils well drained, slopes gentle to moderately steep; grasses mid-height, 3 to 6 feet; little bluestem, Indian grass, big bluestem dominant .............................................. a, b, c

b. Parent material substrate derived from various formations with high concentrations of loess ................................................................. Dry-mesic loess prairie

c. Parent material substrate derived from various formations with high concentrations of sand ................................................................. Dry-mesic sand prairie

b. Parent material substrate derived from various sandstone/shale rock formations .............................................. Dry-mesic sandstone/shale prairie

c. Parent material substrate derived from various dolomite or limestone rock formations .............................................. Dry-mesic limestone/dolomite prairie

5. Little or no rock parent material detectable in upper soil layers; soil parent material loess, glacial till, or sandy alluvium (elevated terraces not subject to flooding) ................................................................. 7

7. Soil parent material predominantly coarse to fine sand (mostly ancient alluvium or wind blown) ...................................................... Sand prairie

7. Soil parent material wind-blown loess, alluvium or glacial till, sometimes deeply weathered rock ......................................................................................................................... 8

8. Soils of somewhat excessively to excessively drained steep to very steep slopes; grass height short, 1 to 3 feet; dominant grasses are little bluestem, hairy grama, buffalo grass; restricted to northwestern Missouri on bluffs adjacent to Missouri River (loess hills) ........................................................................................................... 8

8. Soils of well to moderately well drained, gentle to moderately steep slopes; grasses taller; widespread across the northern half of Missouri .................................................................................................. 9

9. Soils of well-drained, gentle to moderately steep slopes, grasses mid height, 3 to 6 feet; dominant grasses are little bluestem, Indian grass, big bluestem ........................................................................................................... 9

9. Soils of moderately well-drained, gentle lower slopes of hills, valleys, ravines, upland drainage basins, terraces; grasses tall, 6 to more than 10 feet; dominant grass is big bluestem ........................................................................................................... 9

V. GLADE

1. Shallow soil formed from sedimentary rock substrates ......................................................................................... 2

2. Parent material substrate derived from solid chert; restricted to extreme southwest Missouri ...................................................... Chert glade

2. Parent material substrate derived from various limestone, dolomite or sandstone rock formations (may have surficial chert residuum) .............................................................................................................. a, b, c

a. Parent material substrate derived from various limestone bedrock formations .............................................. Limestone glade

b. Parent material substrate derived from various dolomite bedrock formations .............................................. Dolomite glade

c. Parent material substrate derived from various sandstone bedrock formations .............................................. Sandstone glade

1. Shallow soil formed from igneous rock substrates .............................................................................................................. 2

Igneous glade
VI. Cliff/Talus

1. Barren or sparsely vegetated vertical exposures of bedrock and associated accumulated rock fragments;  
   Cliff natural communities .......................................................... 2
2. Vertical exposures of bedrock .......................................................... 3
3. Vegetation adapted to normally dry conditions; generally of south or west exposures .......... a, b, c, d
   a. Bedrock derived from limestone or dolomite rock formations ..... Dry limestone/dolomite cliff
   b. Bedrock derived from sandstone rock formations ............... Dry sandstone cliff
   c. Bedrock derived from chert rock formations ....................... Dry chert cliff
   d. Bedrock derived from igneous rock formations .................. Dry igneous cliff
3. Vegetation of moist or wet conditions (including lateral seepage); generally of north or east  
   exposures ................................................................................ a, b, c, d
   a. Bedrock derived from limestone or dolomite rock formations  
      ................................................................................ Moist limestone/dolomite cliff
   b. Bedrock derived from sandstone rock formations ............... Moist sandstone cliff
   c. Bedrock derived from chert rock formations ....................... Moist chert cliff
   d. Bedrock derived from igneous rock formations .................. Moist igneous cliff
2. Vertical exposures of moderately erodible parent material including loess, shale, unconsolidated sand  
   or gravel ........................................................................ Unconsolidated cliff

1. Steep sloping areas of accumulated rock fragments at the bases of cliffs or steep, rocky slopes; talus natural  
   communities classified by type of rock ..................................................a, b
   a. Bedrock derived from limestone or dolomite rock formations .......... Limestone/dolomite talus
   b. Bedrock derived from igneous rock formations ......................... Igneous talus

VII. Stream Edge

1. Unstable, exposed transported alluvium found in the basin of stream and river beds ..................... 2
2. Alluvial material predominantly sand, silt, mud, organic debris, logjams; stream bed features  
   characteristic of low gradient streams and rivers ................................ Sandbar
2. Alluvial material predominantly gravel or boulders; stream bed features characteristic of higher  
   gradient streams and rivers ............................................................... Gravel wash
3. More stable, but eroding edges of the stream or riverbed including steep embankments, borders of overflow  
   areas, base of talus slopes, bluffs and steep rocky slopes .................. Streambank/riverbank
VIII. WETLAND

1. Soil kept moist or wet by groundwater seepage or a continuous flow of mineralized groundwater ........................................ 2

2. Continuous flow of cool mineralized groundwater flows through fractures or conduits issuing from the earth’s surface and forming spring runs; vegetation generally submerged, emergent or floating ................................................................................................................................. 2

Springs and spring branches

2. Groundwater infiltrates and diffuses through soil in complex patterns forming mucky or peaty mats and/or distributed across marly flats, and sometimes small spring rivulets - Groundwater seepage natural communities ................................................................................................................................. 3

3. Groundwater calcareous; associated with areas of land where dolomite or limestone are the principal underlying substrates - Fen natural communities ................................................................................................................................. 4

4. Soils mucky and/or marly, saturated; highly variable with slopes ranging from 0 to 80 degrees; occurring on hill slopes, glades, cliff ledges, ravines, terraces, floodplains; shrubs and sedges dominant ................................................................................................................................................. 4

5. Groundwater percolating through calcareous glacial till; sometimes shallow limestone rock; restricted and extremely rare in the Central Dissected Till Plains Section ................................................................................................................................. 5

Glacial fen

5. Groundwater percolating through dolomite/limestone substrates (sometimes through chert residuum on steep slopes but with limestone/dolomite or calcareous sandstone near or at the surface; and along terraces at the base of steep adjacent cherty or dolomitic slopes); locally scattered throughout the Ozark Highlands Section ................................................................................................................................................. 6

Ozark fen

4. Soil moist and/or seasonally wet from a combination of calcareous seepage and ponding of rainwater; slopes generally less than 10 degrees ................................................................................................................................................. 6

6. Prairie grasses and forbs intermixed with fen plants ................................................................................................................................. 6

Prairie fen

6. Hardwood trees forming a closed canopy; scattered sedges and hummock-forming bryophytes common ................................................................................................................................................. 6

Forsted fen

3. Groundwater neutral, acidic or saline; associated with areas of land where acidic rock, gravel, shale or other parent materials form the principal underlying substrate ................................................................................................................................................. 7

7. Groundwater highly charged with dissolved salts, often producing a sulfurous odor; restricted to the Central Dissected Till Plains Section ................................................................................................................................. 7

Saline seep

7. Groundwater acidic; seepage areas associated with sand, sandstone or gravel; primarily restricted to the Ozark Highlands Section and Crowley’s Ridge Subsection ................................................................................................................................................. 7

Acid seep
1. Soil kept moist or wet by surface water overflow and interception of the groundwater table ........................................... 8
8. Wetlands of riverine systems; water chemistry influenced by replenishment of freshwater because of stream or river overflow ........................................................................................................... 9
9. Trees or shrubs dominant ........................................................................................................................................ 10
10. Trees dominant; primarily bald cypress and tupelo .................................................................................. Swamp
10. Shrub dominant; primarily buttonbush and willow species ........................................................................ Shrub swamp
9. Herbaceous plants dominant ........................................................................................................................ Marsh
8. Wetlands of depressions in sinkholes or sand ponds; water chemistry influenced by characteristics of local soil, bedrock and vegetation because of a very restricted, locally drained watershed .......... 11
11. Trees or shrubs dominant ...................................................................................................................................... 12
12. Trees dominant; primarily bald cypress and tupelo .................................................................................... Pond swamp
12. Shrubs dominant; primarily buttonbush/swamp rose ............................................................................. Pond shrub swamp
11. Herbaceous plants dominant; floating mats sometimes present .......................................................... Pond marsh

IX. Cave

1. A permanent flow of water enters or exits the main cave entrance; cave passageway contains an appreciable flow of water and/or deep pools, including submerged caves .................................................. Aquatic cave
1. A semipermanent flow of water enters or exits the main cave entrance, or the cave is essentially dry ........................................................................................................................................ Terrestrial cave